

PLUMBING & CARBON MONOXIDE

- by John Williams, Jr.
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Onondaga County Water Environment Protection

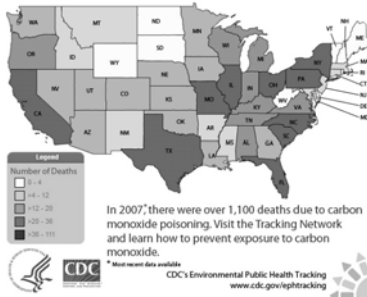
WHY PLUMBING & CARBON MONOXIDE POISONING?

CARBON MONOXIDE IS...
AN ODORLESS, COLORLESS GAS THAT CAN
CAUSE SUDDEN ILLNESS AND DEATH

CARBON MONOXIDE IS FOUND IN COMBUSTION FUMES

- Stoves
- Gas ranges
- Heating systems
- Burning charcoal & wood
- Cars & trucks
- Small gasoline engines
- Lanterns

Number of deaths due to carbon monoxide poisoning reported in 2007*



CO POISONING IS...

Leading cause of unintentional poisoning deaths in the U.S.

Responsible for ~15,000 ER visits annually

Responsible for ~ 500 deaths annually in the U.S

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- Most exposures occur in residences
- Occur most frequently between November - February
- Greater proportion occur in the Midwest or the Northeast
- Most reported illnesses involve women and children

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CO poisoning is preventable!

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AMANDA'S LAW





AMANDA HANSEN

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1 CARBON MONOXIDE DEATH & 1 CARBON MONOXIDE POISONING, SALINA, NY

AUGUST 29, 2014



Gabriella Collins, 6, died, and 14-year-old Jaden Collins was seriously injured



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WHAT CAN WE DO IN NEW YORK STATE TO PREVENT SUCH TRAGEDIES?

- Enforce codes
- Building and plumbing inspections
- Fire inspections
- Educate
- Encourage combination smoke/CO alarms

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NEW YORK STATE CODE RE: CARBON MONOXIDE ALARMS

- FIRE CODE – SECTION F610
- RESIDENTIAL CODE – SECTION R313 & APPENDIX J

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CARBON MONOXIDE ALARMS (OR WHERE PERMITTED CO DETECTORS)

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- Shall be installed, operated, operated and maintained in accordance with the provisions of Section 610 or, in the alternative, in accordance with the provisions of NFPA 720
- EXCEPTION!

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EXCEPTION:

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- SHALL NOT BE REQUIRED IN A BUILDING OR STRUCTURE THAT CONTAINS NO CARBON MONOXIDE SOURCE

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610.1
IDENTIFIES GROUPS THAT CO ALARMS (OR WHERE PERMITTED CO DETECTORS) SHALL BE PROVIDED IN ALL NEW AND EXISTING BUILDINGS AND STRUCTURES:

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- E
- I-1
- I-2 (EXCEPT HOSPITALS)
- I-4
- R-1
- R-2
- R-3
- R-4

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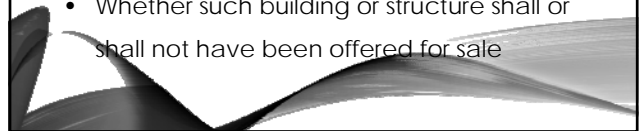
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WITHOUT REGARD TO:

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- The date of construction of the building or structure
- Whether such building or structure shall or shall not have been offered for sale

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DEFINITION OF CARBON MONOXIDE SOURCE

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- Any appliance, equipment, device or system that may emit carbon monoxide (including but not limited to...

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Fuel Fired Furnaces, RNACES

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Fuel Fired Boilers,



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Space Heaters With Pilot Lights Or Open Flames,



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WOOD STOVES



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Fireplaces,



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Stoves,



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Ovens,



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Dryers,



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Water Heaters,




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Refrigerators


that use gas or liquid fuel,



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Garages, and other motor vehicle related occupancies.



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CARBON MONOXIDE ALARMS

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610.3 CO ALARM REQUIRED LOCATIONS

- EXCEPTIONS:
 1. Where coverage at a location is required by more than one provision of Section 610.3, providing one CO alarm at such location shall be deemed to satisfy all such provisions.

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2. In lieu of a CO alarm, a CO detector may be provided at any location where coverage is required, provided that such carbon monoxide detector is part of a system that causes an alarm to sound at such location when CO is detected at such location.

610.3.1 ONE-FAMILY DWELLINGS

610.3.1.1
Buildings constructed on or after January 1, 2008



610.3.1.1.1

- CO alarm shall be provided on each story containing a sleeping area, within 15 feet of the sleeping area
- More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from the CO alarm

610.3.1.1.2

- CO alarm shall be provided on each story that contains a carbon monoxide source

610.3.1.2
Buildings constructed prior to January 1, 2008

- A CO alarm shall be provided on the lowest story containing a sleeping area within 15 feet of the sleeping area
- More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from a CO alarm

610.3.2

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- ✓ Two-family dwellings
- ✓ Multiple single-family dwellings (townhouses)
- ✓ Buildings owned as condominiums or cooperatives & containing dwelling units



610.3.2.1

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Two-family buildings constructed on or after January 1, 2008.

Within each dwelling unit:



610.3.2.1.1

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- CO alarm shall be provided on every story containing a sleeping area, within 15 feet of the sleeping area
- More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from a CO alarm

610.3.2.1.2

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- A CO alarm shall be provided on every story that contains a carbon monoxide source

610.3.2.2

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Two-Family Buildings constructed prior to January 1, 2008

- Each dwelling unit shall have a CO alarm on the lowest story containing a sleeping area, within 15 feet of the sleeping area
- More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from a CO alarm

610.3.3

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B&B Dwellings & structures which...

1. Contain one or more sleeping areas, and..



2. Are classified in one or more of the following occupancy Groups:

1. E
2. I-2 (except hospitals) & I-4
3. R-1
4. R-2
5. R-3 or...
6. R-4 and...



3. Are not covered by Section 610.3.1 or Section 610.3.2

610.3.3.1 Buildings constructed on or after January 1, 2008



610.3.3.1.1 Dwelling units

and sleeping units

•Carbon monoxide alarms shall be provided within each dwelling unit and within each sleeping unit at the locations specified in this section.



610.3.3.1.1.1

- In a dwelling unit or sleeping unit that contains a CO source, a CO alarm shall be provided on each story that contains a sleeping area.
- The CO alarm shall be located no more than 15 feet away from a CO source
- More than 1 CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from a CO alarm
- A CO alarm shall be provided within each sleeping area that contains a CO source.

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610.3.3.1.1.2

- In a dwelling unit or sleeping unit which contains no carbon monoxide source, but which is located (in whole or in part) on the same story as a CO source, a CO alarm shall be provided on each story that contains a sleeping area....

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- The CO alarm shall be located within 15 feet of the sleeping area.
- More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from a CO alarm.

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610.3.3.1.1.3


- In a dwelling unit or sleeping unit which contains no CO source and which is not located (in whole or in part) on the same story as a CO source, no CO alarm is required.

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610.3.3.1.2
SLEEPING AREAS NOT LOCATED WITHIN A DWELLING UNIT

- CO alarms shall be provided within sleeping areas that are not located within a dwelling unit when required by this section...



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610.3.3.1.2.1

- A CO alarm shall be provided within each sleeping area that contains a carbon monoxide source.

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610.3.3.1.2.2

- A CO alarm shall be provided within each sleeping area that is located (in whole or in part) on the same story as a carbon monoxide source.

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610.3.3.1.0
STORIES WHICH CONTAIN A CARBON MONOXIDE SOURCE AND CONTAIN NO DWELLING UNIT, SLEEPING UNIT OR SLEEPING AREA:

- A CO alarm shall be provided on every story which
 1. Contains a carbon monoxide source and...
 2. Contains no dwelling unit, sleeping unit or sleeping area.



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610.3.3.2
BUILDINGS AND STRUCTURES CONSTRUCTED PRIOR TO JANUARY 1, 2008

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610.3.3.2.1
DWELLING UNITS AND SLEEPING UNITS

- CO alarms shall be provided within each dwelling unit and within each sleeping unit at the locations specified in this section.

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610.3.3.2.1.1
DWELLING OR SLEEPING UNIT WHICH CONTAINS A CO SOURCE

- CO alarm shall be provided on the lowest story that contains a sleeping area
- CO alarm shall be located within 15 feet of the sleeping area
- More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from a CO alarm
- CO alarm shall be provided within each sleeping area that contains a CO source

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610.3.3.2.1.2

- Within each dwelling unit or sleeping unit that contains no CO source, but which is located (in whole or in part) on the same story as a CO source, a CO alarm shall be provided on the lowest story containing a sleeping area, within 15 ft. of the sleeping area.
- More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 ft. away from a CO alarm.


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610.3.3.2.1.3
IN A DWELLING OR SLEEPING UNIT WHICH CONTAINS NO CO SOURCE AND WHICH IS NOT LOCATED (IN WHOLE OR IN PART) ON THE SAME STORY AS A CO SOURCE, NO CO ALARM IS REQUIRED.

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610.3.3.2.2
SLEEPING AREAS NOT LOCATED WITHIN A DWELLING UNIT


- CO alarms shall be provided within sleeping areas that are not located within a dwelling unit when required by this section.



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610.3.3.2.2.1

- A CO alarm shall be provided within each sleeping area that contains a carbon monoxide source.



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610.3.3.2.2.2

- A CO alarm shall be provided within each sleeping area that is located (in whole or in part) on the same story as a carbon monoxide source.

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610.3.3.2.3
STORIES WHICH CONTAIN A CO SOURCE AND CONTAIN NO DWELLING UNIT, SLEEPING UNIT OR SLEEPING AREA

- A CO alarm shall be provided on every story which
 1. Contains a CO source and...
 2. Contains no dwelling unit, sleeping unit or sleeping area.



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610.3.4
BUILDINGS AND STRUCTURES CLASSIFIED IN OCCUPANCY GROUP I-1

- 610.3.4.1 Buildings constructed on or after 1/1/2008
- 610.3.4.1.1
 - A CO alarm shall be provided on every story containing a sleeping area, within 15 feet of the sleeping area.
 - More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from a CO alarm.

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610.3.4.1.2

- A CO alarm shall be provided on every story that contains a CO source.



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610.3.4.2
BUILDINGS CONSTRUCTED PRIOR TO 1/1/2008

- A CO alarm shall be provided on every story containing a sleeping area, within 15 feet of the sleeping area.
- More than (1) CO alarm shall be provided where necessary to assure that no sleeping area on such story is more than 15 feet away from a CO alarm.

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610.4
NEW CARBON MONOXIDE SOURCE

- Applies when a CO source is installed in, or added, or attached to a building or structure after the date of original construction of the building or structure.
- Applies without regard to the date of original construction of the building or structure.

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- When a CO source is installed in, or added, or attached to a building or structure...
 - The building or structure shall be evaluated as if it were constructed on or after January 1, 2008.
 - A CO alarm shall be provided at each location pursuant to Section 610.3.
 - EXCEPTION: In lieu of a CO alarm, a CO detector may be provided at any location where coverage is required, provided that such CO detector is part of a system that causes an alarm to sound at such location when CO is detected at such location.

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610.5 POWER SOURCE ⁷³

- CO alarms, detectors, and the alarm control units to which CO detectors are connected shall receive their primary power from the building wiring, and shall be equipped with a battery backup system that automatically provides power from one or more batteries when primary power is interrupted.
- Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection.

EXCEPTIONS:

1. CO alarms and CO detectors installed in a building or structure without an electrical power source shall be battery operated.
2. CO alarms and CO detectors installed in a building or structure constructed prior to January 1, 2008 may be battery operated, cord-type or direct plug.

3. CO alarms and detectors installed in a building or structure pursuant to Section 610.4 may be battery operated, cord-type or direct plug. ⁷⁵
4. Building or structure constructed after January 1, 2008 and prior to the effective date of this code, when a CO alarm or CO detector is provided at a location where coverage was not required by prior versions of the Uniform Code, but where coverage is required by Section 610, such CO alarm or CO detector may be battery operated, cord-type or direct plug.

610.6 EQUIPMENT ⁷⁶

- CO alarms shall be listed and labeled as complying with UL 2034 or CAN/CSA 6.19.
- CO detectors shall be listed and labeled as complying with UL 2075 and shall meet the sensitivity testing and alarm thresholds of UL 2034 or CAN/CSA 6.19.
- CO alarms, CO detectors and alarm control units shall be installed in accordance Section 610 and the manufacturer's installation instructions.

- A single or multiple-station device that has:
 1. a sensor capable of detecting the presence of CO and...
 2. an alarm that sounds when CO is detected

CO ALARM



- A device that:
 1. has a sensor capable of detecting the presence of CO and...
 2. is connected to an alarm control unit that sounds an alarm when CO is detected

CO DETECTOR





610.6.1
CONNECTION OF MULTIPLE CO ALARMS AND
DETECTORS

- When more than (1) CO alarm is required to be installed within an individual dwelling unit, sleeping unit, or sleeping area, all CO alarms in such dwelling unit, sleeping, or sleeping area shall be interconnected.
- EXCEPTION: Interconnection is not required where battery operated, cord-type or direct plug CO alarms and detectors are permitted.

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610.6.2 MAINTENANCE AND TESTING

- CO alarms, CO detectors, and alarm control units shall be maintained in an operative condition at all times.
- CO alarms, CO detectors, and alarm control units shall be periodically tested in accordance with the manufacturer's instructions.

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- The battery or batteries used as the primary or backup power source shall be replaced when low or when otherwise required by the manufacturer's instructions.
- CO alarms, CO detectors, and alarm control units shall be replaced or repaired where defective, and shall be replaced when they cease to operate as intended.



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610.6.3 DISABLING OF ALARMS

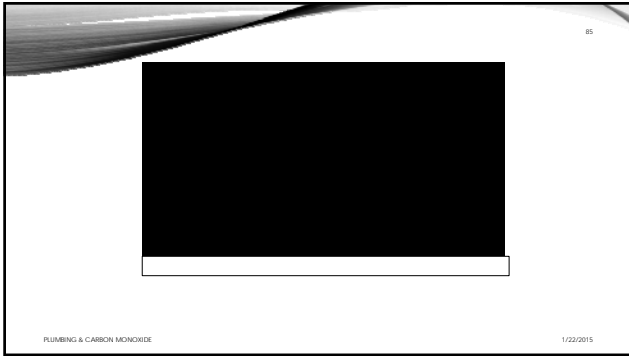
- No CO alarm, CO detector, or alarm control unit shall be removed or disabled, except for service, repair or replacement purposes.

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3 CARBON MONOXIDE DEATHS, BOONE, NC

APRIL 16, 2013	JUNE 8, 2013
	
DARYL AND SHIRLEY JENKINS	JEFFERY WILLIAMS

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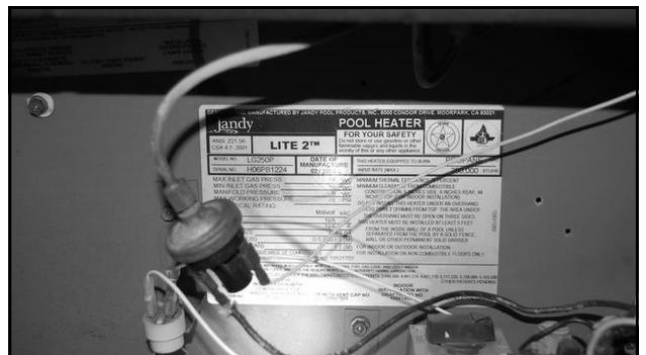
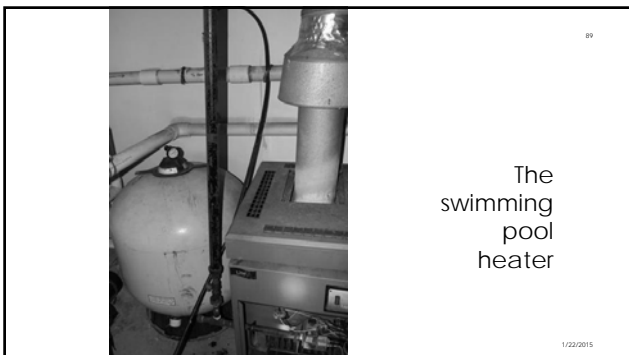


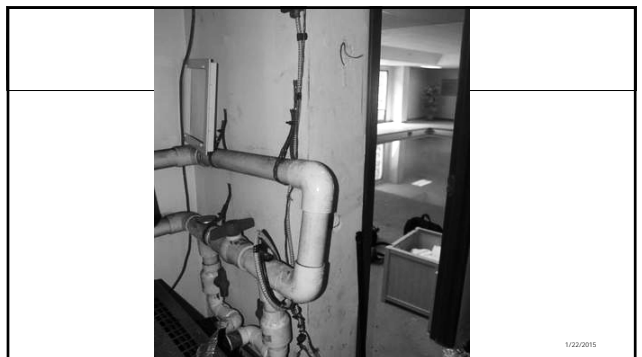
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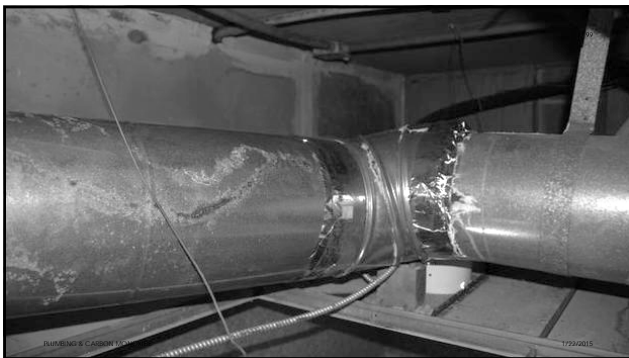
THE STATE OF NORTH CAROLINA'S
EVIDENCE IN THIS CASE INCLUDES:

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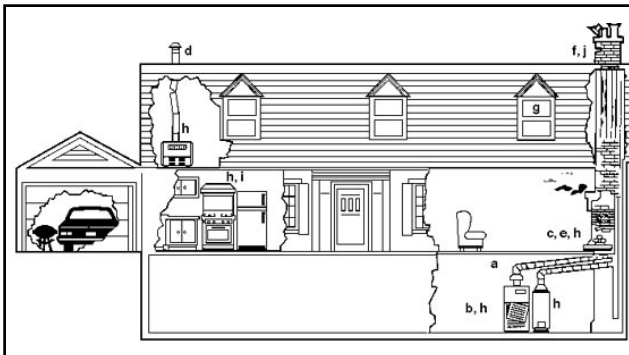
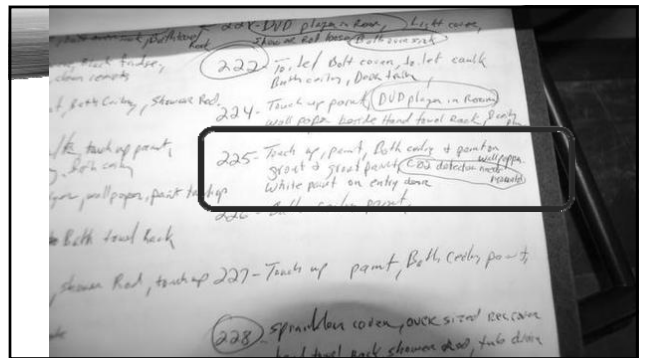
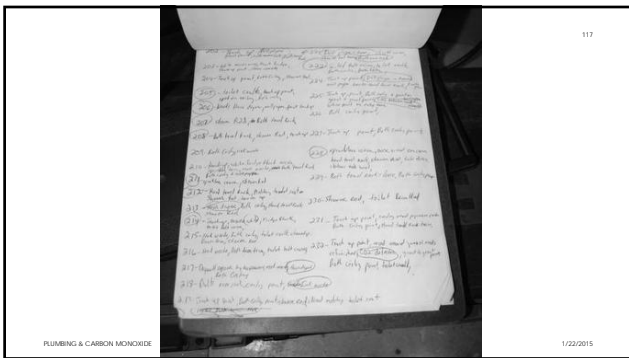















Kerosene heaters consume oxygen as they burn. If operated in a small room or in an inadequately ventilated area, oxygen in the air could be reduced to a dangerous level.

Reduced oxygen supply could lead to incomplete combustion of fuel and the production of carbon monoxide.

Carbon monoxide is a colorless, odorless gas which in sufficient concentrations, or if breathed over a period of time, can kill without warning.

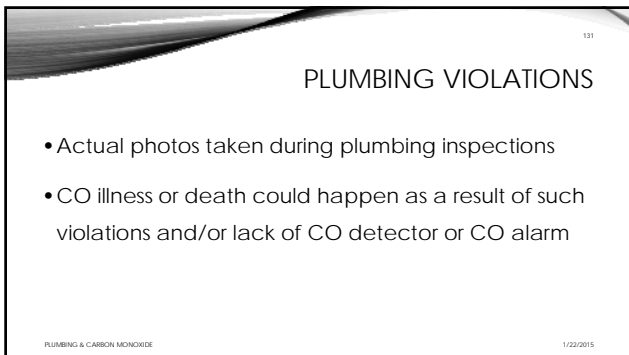
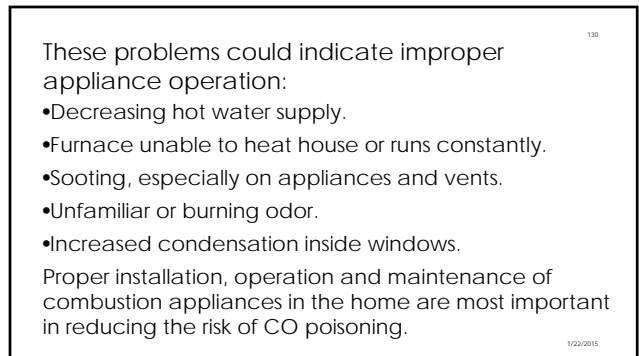
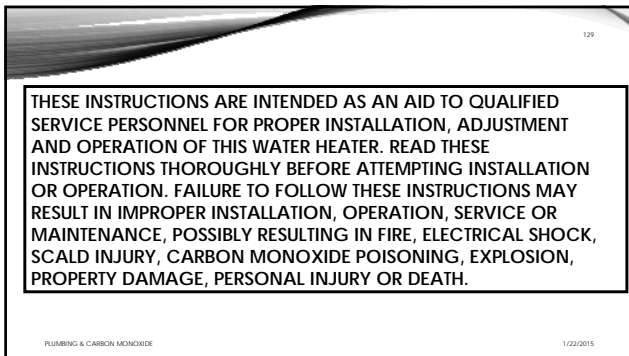
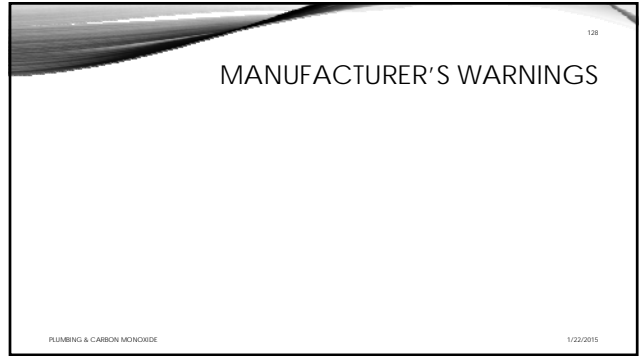


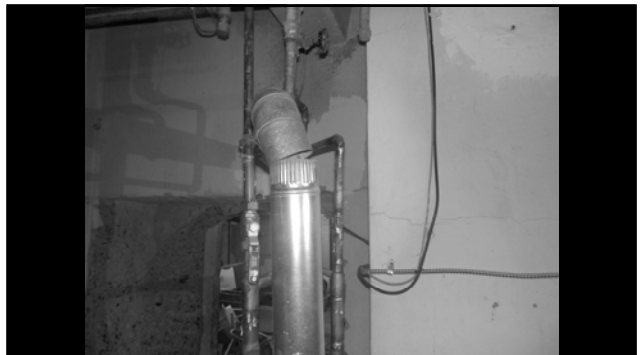
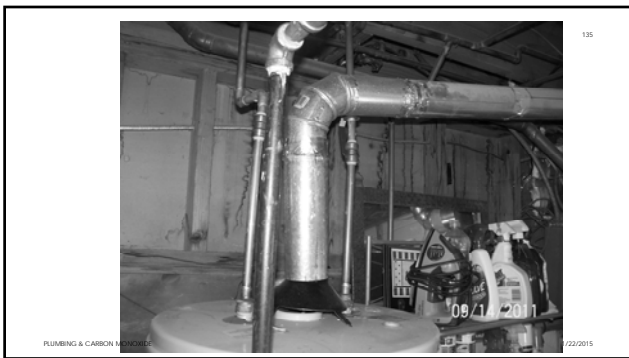
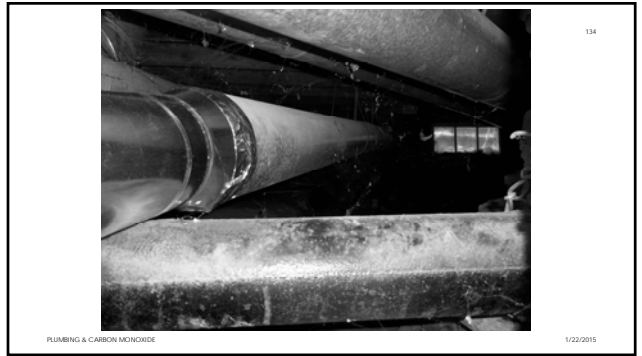
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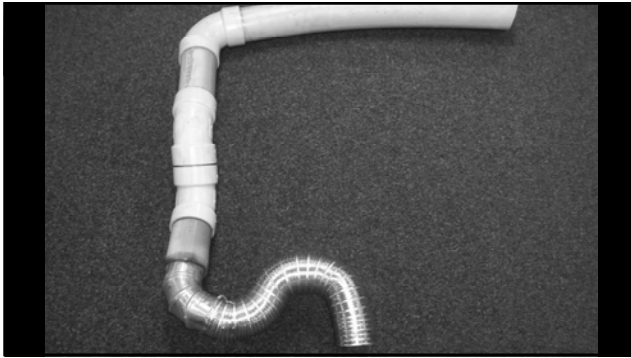
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IN CONCLUSION, A FEW QUESTIONS
FOR YOU

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IS A CO DETECTION OR ALARM REQUIRED IN THE
BUILDING WE ARE IN TODAY?

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- If so, is it working?

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- When was it last inspected?

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- Does this building have an indoor pool or an outdoor pool water heater located inside the building?

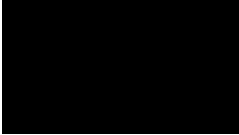
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- What does the plumbing system look like?

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QUESTIONS?

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THANK YOU!

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